

Version with Markings to show changes made

6

Each of the external electrodes 2 may comprise a conductive member treated by firing of silver or deposition of gold.

The external electrodes 2 extend in the stacking direction of the multilayer structure 1 and fixedly attached to the one side surface portion and the other side surface portion of the multilayer structure 1, respectively. Therefore, the external electrode 2 formed on the one side surface portion of the multilayer structure 1 is electrically connected to the odd-numbered ones of the internal electrodes 1b while the external electrode 2 formed on the other side surface portion of the multilayer structure 1 is electrically connected to the even-numbered ones of the internal electrodes 1b. A pair of external lead wires 5 are connected by soldering to upper parts of the external electrodes 2, respectively.

The multilayer piezoelectric actuator device further comprises a pair of conductive members 3 coupled to the external electrodes 2, respectively.

Each of the conductive members 3 is made of a metal foil such as a copper foil and extends in the stacking direction to be spaced from and faced to the side surface of the multilayer structure 3. Each of the conductive members 3 is slightly shorter than the external electrode 2 in the stacking direction.

The conductive member 3 has one transversal end electrically and mechanically connected to the external electrode 2 by a brazing metal 4. On the other hand, the other transversal end of the conductive member 3 is not connected to anywhere at all and is a free end independent of the external electrode 2 and the multilayer structure 1.

It will be assumed here that a crack 7 is produced in the multilayer structure 1 and the external electrodes 2 due to some reason. In this event, the transversal one end of the conductive member 3 may be torn off together with the external electrode 2. However, the other transversal end of the conductive member 3 is not subjected to any force and is therefore kept

09/836,998



VERSION WITH MARKINGS TO SHOW CHANGES MADE

Claims 1, 6 and 7 have been amended as follows:

1. (Second amended) A multilayer piezoelectric actuator device comprising:

5 a multilayer structure including a plurality of piezoelectric elements and a plurality of internal electrodes, said piezoelectric elements and said internal electrodes being stacked in a stacking direction so that each of said internal electrodes is placed between adjacent ones of said piezoelectric elements;

10 [a pair of] first and second external electrodes respectively disposed on [respective] first and second side surfaces of said multilayer structure, each of said first and second external electrodes being connected to respective alternate ones of said internal electrodes; and

15 [a pair of] first and second conductive members respectively connected to said first and second external electrodes, [respectively, each of] said first conductive [members] member including a free end portion that is spaced apart from and faced to said [respective] first side [surfaces] surface of the multilayer structure, and said second conductive member including a free end portion that is spaced apart from and faced to said second side surface of the multilayer structure.

6. (Second amended) A multilayer piezoelectric actuator device comprising:

a multilayer structure including a plurality of piezoelectric elements and a plurality of internal electrodes, said piezoelectric elements and said internal electrodes being stacked in a stacking direction so that each of said internal electrodes is placed between adjacent ones of said piezoelectric elements;

10 [a pair of] first and second external electrodes respectively disposed on [respective] first and second side surfaces of said multilayer structure, each of said first and second external electrodes being connected to respective alternate ones of said internal electrodes; and

15 [a pair of] first and second conductive members respectively connected to said first and second external electrodes, [respectively, each of] said first conductive [members] member including a free end portion that is spaced apart from and faced to said [respective] first side [surfaces] surface of the multilayer structure, and said second conductive 20 member including a free end portion that is spaced apart from and faced to said second side surface of the multilayer structure;

25 [wherein said side surfaces of the multilayer structure have respective side surface portions opposite to each other in a direction perpendicular to said stacking direction, and said external electrodes are fixed to said side surface portions respectively;]

[wherein said internal electrodes are alternately exposed at said side surface portions and connected to said external electrodes, respectively; and]

30 wherein each of said internal electrodes has a first end face which is substantially flush with one of said first and second side [surface portions] surfaces of the multilayer structure, and a second end face which is retracted from the other of said first and second side [surface portions] surfaces of the multilayer structure.

35

7. (Second amended) A multilayer piezoelectric actuator device comprising:

a multilayer structure including a plurality of piezoelectric elements and a plurality of internal electrodes, 5 said piezoelectric elements and said internal electrodes being stacked in a stacking direction so that each of said internal electrodes is placed between adjacent ones of said piezoelectric elements;

10 [a pair of] first and second external electrodes respectively disposed on [respective] first and second side surfaces of said multilayer structure, each of said first and second external electrodes being connected to respective alternate ones of said internal electrodes; and

15 [a pair of] first and second conductive members respectively connected to said first and second external electrodes, [respectively, each of] said first conductive

[members] member including a free end portion that is spaced apart from and faced to said [respective] first side [surfaces] surface of the multilayer structure, and said second conductive
20 member including a free end portion that is spaced apart from and faced to said second side surface of the multilayer structure;

[wherein said side surfaces of the multilayer structure have respective side surface portions opposite to each other in a direction perpendicular to said stacking direction, and said
25 external electrodes are fixed to said side surface portions respectively;]

[wherein said internal electrodes are alternately exposed at said side surface portions and connected to said external electrodes, respectively; and]

30 wherein each of said internal electrodes has end faces which are substantially flush with said first and second side [surface portions] surfaces of the multilayer structure, and one of said faces of each of said internal electrodes is covered with an insulator at one of said first and second side [surface
35 portions, respectively] surfaces of the multilayer structure.